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1. Price Indexes of Electric Utility Construction

Distribution Systems
 Transmission Lines
 Transformation & Switching Stations

1961 = 100

The base-weighted price indexes of the costs of constructing electrical utility distribution systems, transmission lines and transformation and switching stations in Canada express prices in a given year for materials, labour and equipment as a percentage of prices for the same components of cost in the base year 1961. Annual commodity, group and total indexes from 1956 to 1966 are presented herein. The 1966 indexes are preliminary and are in addition to those released in June 1966 in DBS Occasional Paper 62-526.

The indexes and explanatory information released below are also to be found in the August 1967 issue of Prices and Price Indexes, DBS Publication 62-002.

Characteristics of Recent Index Movement

The sharp increases in demand for capital goods in each of the years 1964, 1965 and 1966 was in general accompanied by rising prices for the inputs into electric utility construction. By 1966 the resources of the capital-goods producing industries were being more fully utilized. The resulting demands for labour were accompanied by sharply increasing wage rates. As shown in the following

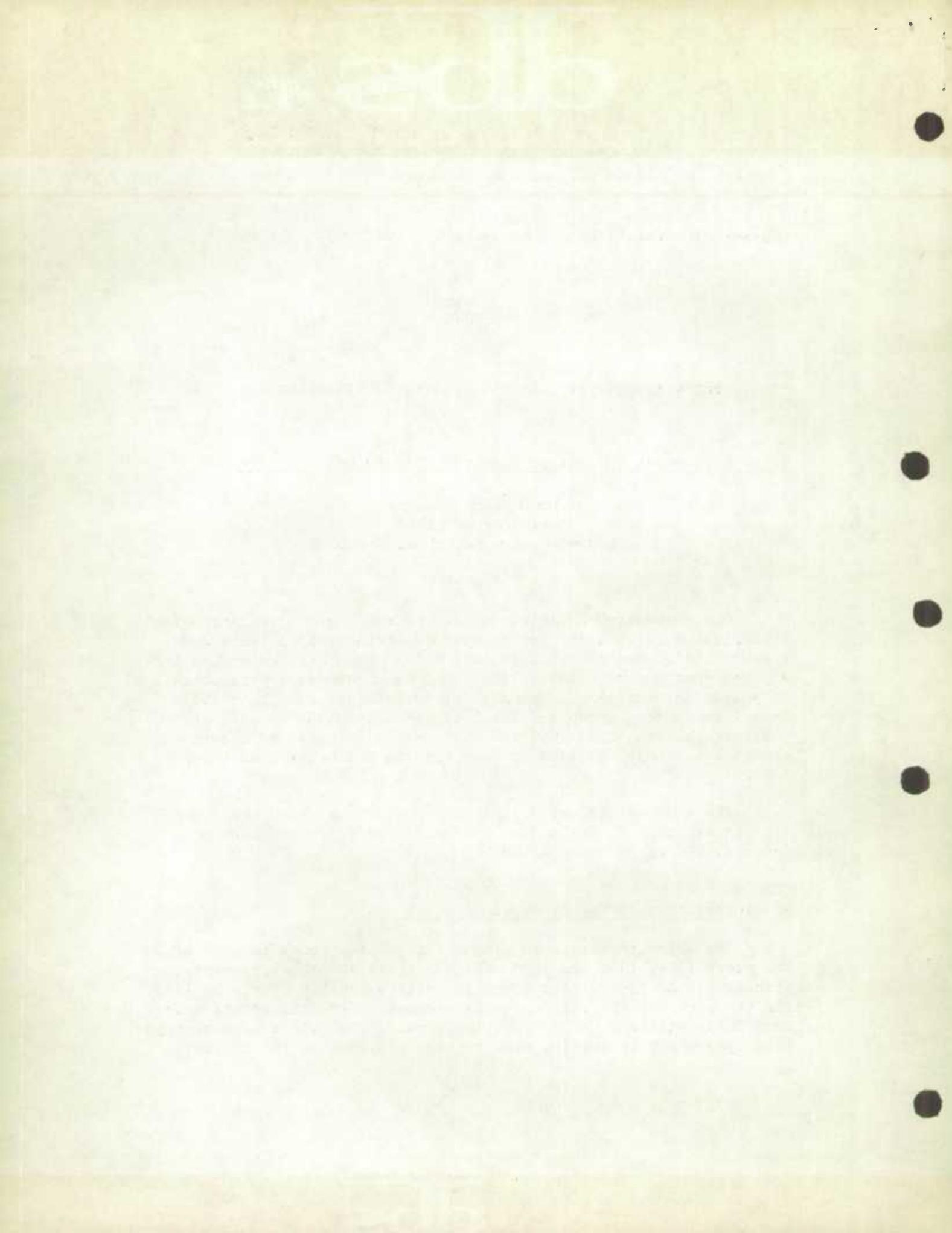


table wage rate increases for the construction of electric utilities showed increases of around 4 percent in 1964 but by 1966 these rates were rising by about 8 1/2 per cent. The increases in the materials and capital equipment components were, in general, not as sharp, and displayed more irregularity.

	Percentage changes		
	1964 1963	1965 1964	1966 1965
Distribution systems	+ 2.0	+ 2.6	+ 6.2
Construction	+ 2.5	+ 4.5	+ 7.0
Materials	+ 1.3	+ 4.6	+ 6.3
Poles, western cedar	- .8	+ 13.6	+ 7.9
Conductors	+ 1.7	+ 4.2	+ 8.9
Labour	+ 4.2	+ 5.1	+ 8.7
Construction equipment	+ 1.3	+ 1.1	+ 3.0
Distribution systems equipment	+ 1.2	- 2.3	+ 3.9
Transmission lines	+ .4	+ 5.4	+ 4.9
Construction			
Materials	- .9	+ 6.1	+ 3.6
Poles, western cedar	- 1.9	+ 13.2	+ 13.5
Conductors, ACSR	- 3.0	+ 7.9	+ 1.5
Insulators	0.0	+ 4.5	+ 5.8
Labour	+ 3.9	+ 5.0	+ 8.6
Construction equipment	+ 2.0	+ 1.6	+ 3.3
Transformation and switching stations	+ 5.7	+ 5.3	+ 5.7
Structures and improvements	+ 3.4	+ 9.2	+ 6.8
Materials	+ 5.2	+ 7.5	+ 3.6
Buswork and conductors	+ 7.1	+ 9.9	+ 8.0
In-place prices	- 2.3	+ 15.0	+ 17.0
Earth excavation	- 3.8	+ 15.3	+ 19.9
Crushed gravels	+ .9	+ 14.5	+ 11.3
Labour	+ 3.6	+ 6.4	+ 8.1
Station equipment	+ 6.9	+ 4.2	+ 4.9
Power transformers	+ 8.3	+ 2.3	+ 3.8
Metalclad switchgear	+ 4.5	+ 9.9	+ 6.7
Power circuit breakers	+ 6.0	+ 2.7	+ 5.0
Public and private investment in Canada(1)			
Electric utility construction, including generating stations	+ 22.7	+ 24.9	+ 12.1
Total investment in Canada	+ 16.5	+ 17.6	+ 15.8

(1) Source: Public and Private Investment in Canada, DBS Catalogue Number 61-206, Annual.

Index Weights

It is suggested that users making extensive use of the indexes will find it useful to retain the pictorial tables following which illustrate the commodity weights and the method of aggregating indexes into major groups and the total indexes. Weights to four decimals are provided to assist in index calculations but they should not be regarded as significant beyond one decimal place.

between 20 January 1966 and 27 July 1967, the number of deaths due to
malaria in India fell by 30 per cent, and the number of cases of malaria
by 54.08 per cent.

Thus, health care largely depends on the availability of

Characteristics of the Indexes

In electric utility terms, the index is designed to provide an estimate of the impact of price change on the cost of materials, labour and equipment used in constructing and equipping electric utilities in a specified base period. The index provides an estimate of how much more, or less it would cost to reproduce the base-period programme of construction in another period, using the same construction technology as in the base period and assuming rates of profit and productivity in construction are the same in both periods.

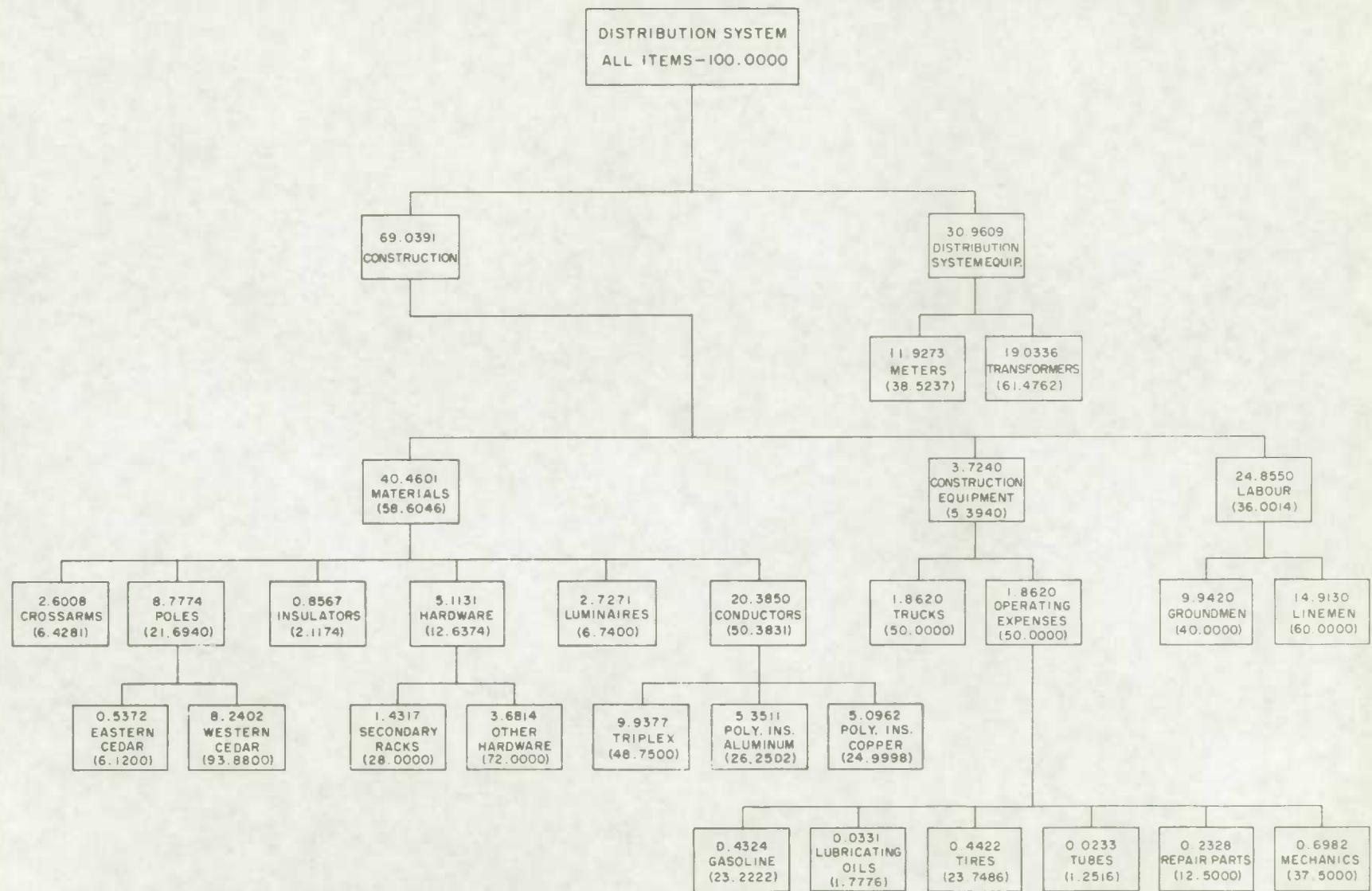
As the market does not yield comparable selling prices for such unique transactions as, for example, the sale of a transmission line, it was not possible to produce an index of the prices of completed structures. Completed structure indexes would be appropriate for users wishing either to estimate reproduction costs or to deflate capital formation. For such uses the indexes introduced in this publication have specific shortcomings. Nonetheless, they may be helpful for such purposes provided the users understand the deficiencies. Thus the reader is asked to make particular note of Section III, of DBS Occasional Paper 62-526 Capital Expenditures Price Indexes - The Necessity for Compromise and Section XI, (of the same paper) Uses and Limitations. In addition, because particular construction projects are unique, the aggregate indexes will not likely be appropriate to specific projects since they relate to an average mix of materials, labour and equipment derived from a variety of projects in a specific base period. Thus, if the component price indexes and their weights included in the aggregate index presented herein are inappropriate for a particular purpose the user should consider selecting appropriate component indexes from among those published herein. These indexes could then be combined into an aggregate index by utilizing weights derived from the projects or assets to be costed or deflated.

Prices used in the indexes are for the most part selling prices reported monthly by manufacturers for materials or equipment. The price reported is for units and terms of sale representative of the volume sales of the manufacturer. Where sales to electric utilities form a small share of the total sales of the manufacturer, the price reported may not adequately represent the price to the construction trade and others directly involved in constructing and equipping electric utility facilities. In such cases, prices charged other manufacturers or wholesalers have been included in the index. Federal sales tax changes are reflected in the index but no adjustments have been made for provincial tax changes. Wage rate data have been supplied by the Department of Labour and represent minimum hourly rates paid to construction workers on federal government contracts.

Construction has been defined as new construction or major reconstruction for distribution systems, transmission lines and transformation or switching stations. Maintenance and operating costs are excluded. Cost data were supplied by major utilities, relating to own account and to contract construction erected during the last half of the 1950's. Weights were derived from these data which indicated the relative importance of the major inputs to the construction. The components of cost relating to distribution and transmission facilities encompass such items as poles, hardware, conductors, insulators, meters, distribution transformers and expenditures for labour, e.g. - linemen and groundmen. Costs relating to construction equipment such as trucks, and components of equipment operating costs such as tires, gasoline and repairs were also included. Transformation and switching stations encompass some of the items listed above but the most important elements of cost related to transformers and switching equipment. Expenditures for land and rights-of-way have been excluded.

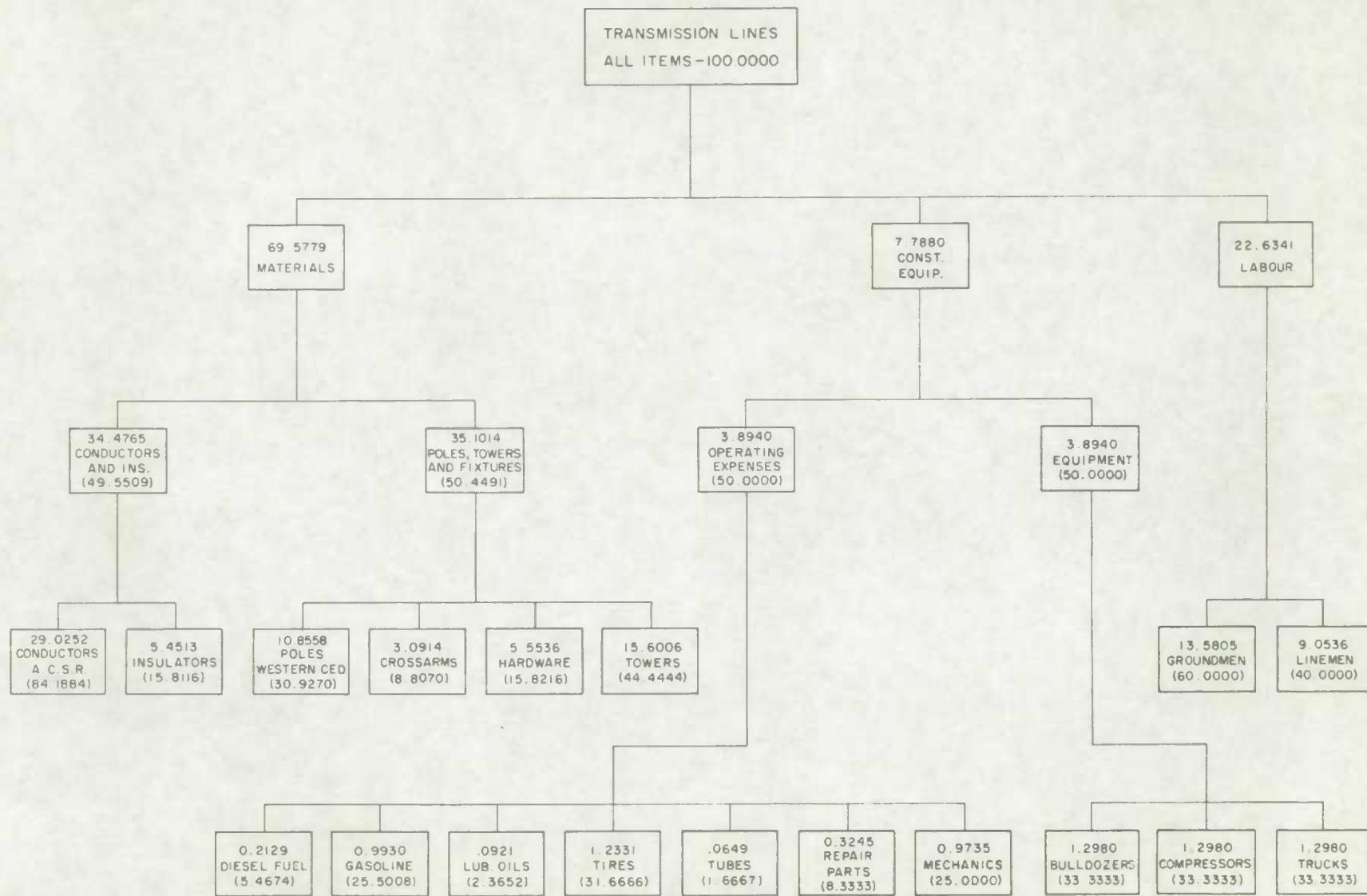
The term Canadian electric utility has been defined to include municipal as well as nonmunicipal utilities but the majority of the cost data tabulated was derived from the major nonmunicipal utilities. Manufacturers who produce electricity for their own use and who may also sell electricity have been excluded from the cost survey.

WEIGHTING DIAGRAM

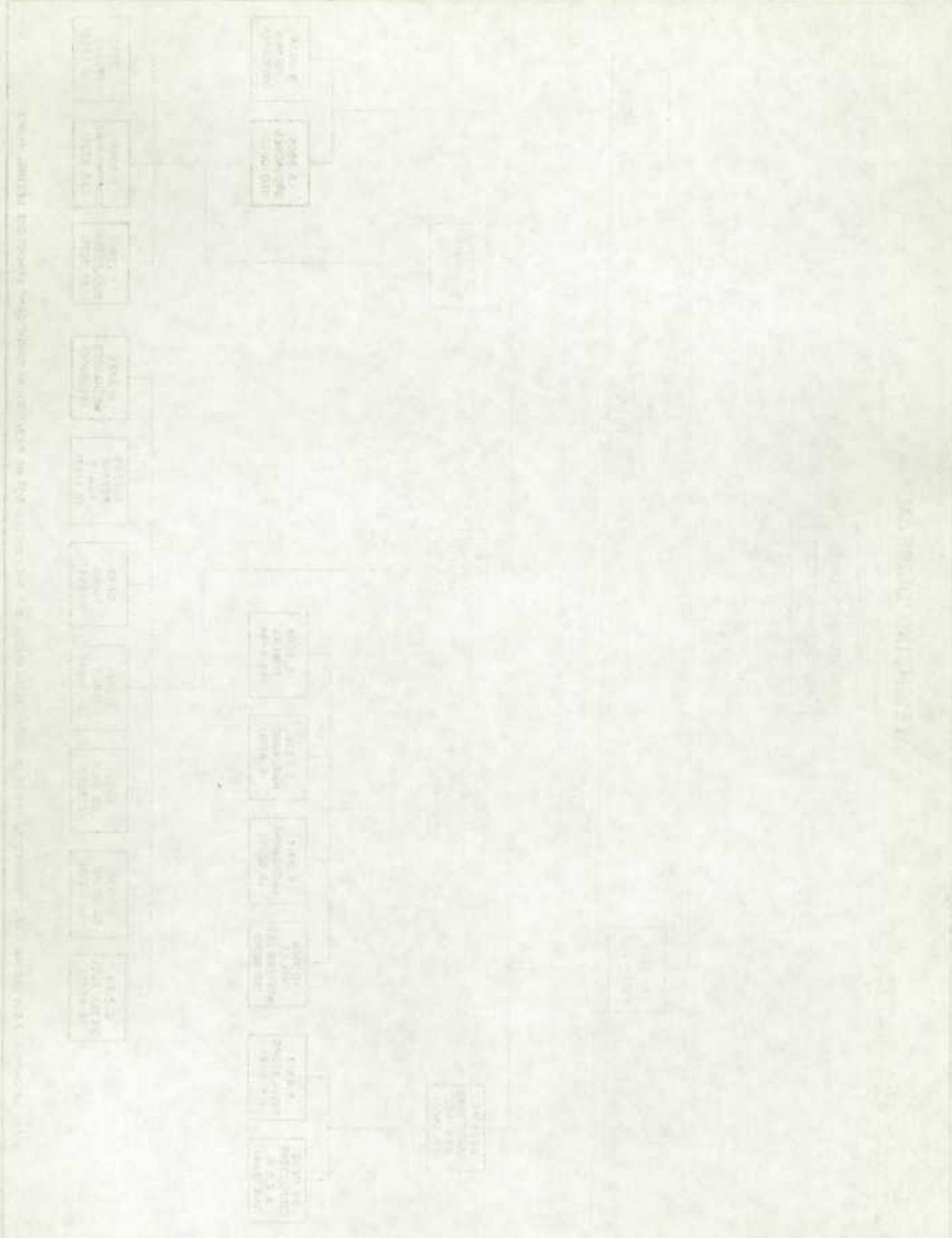


NOTE: WEIGHTS TO FOUR DECIMALS ARE PROVIDED TO ASSIST IN INDEX CALCULATIONS BUT THEY SHOULD NOT BE REGARDED AS SIGNIFICANT BEYOND ONE DECIMAL PLACE

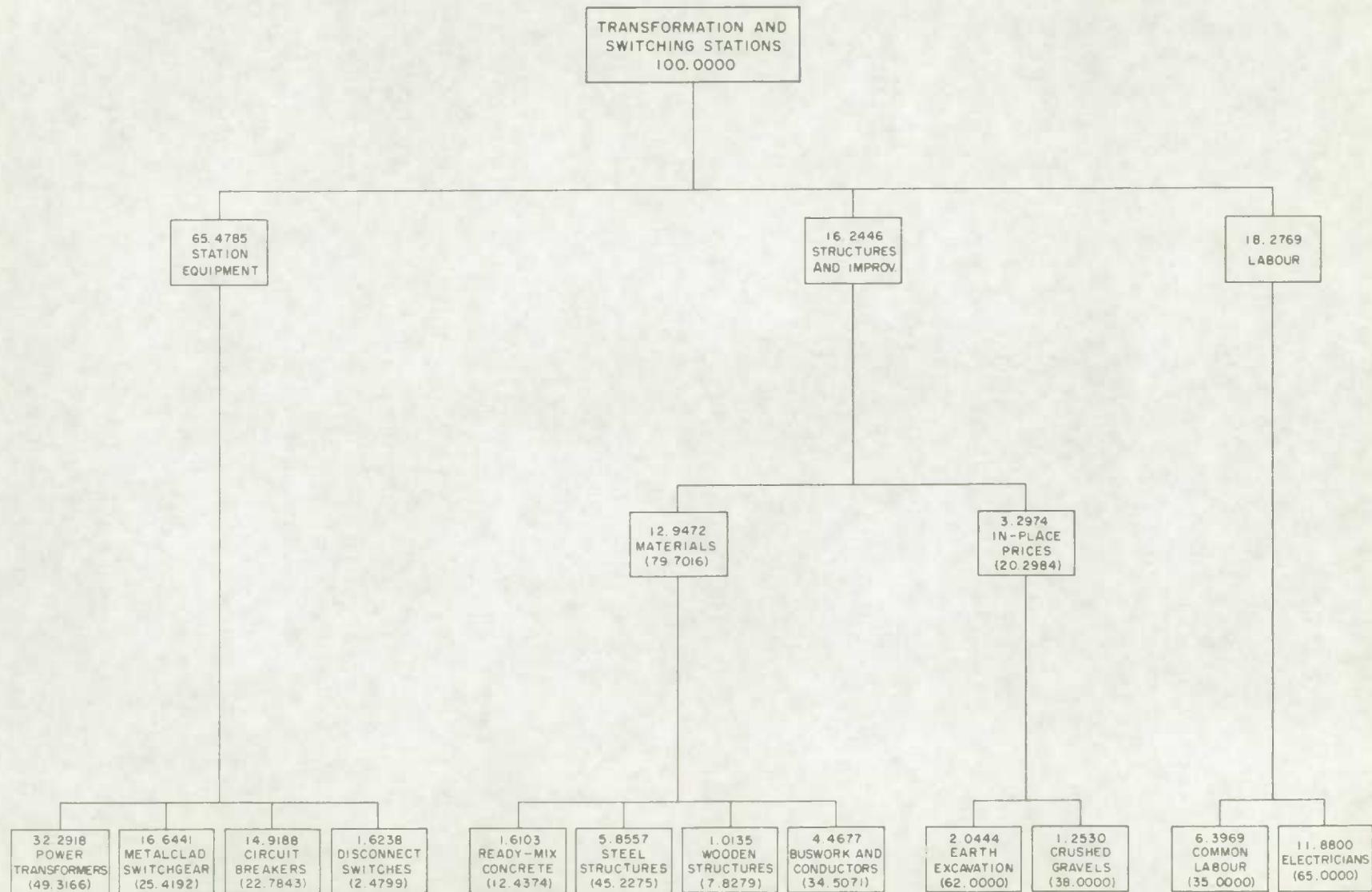
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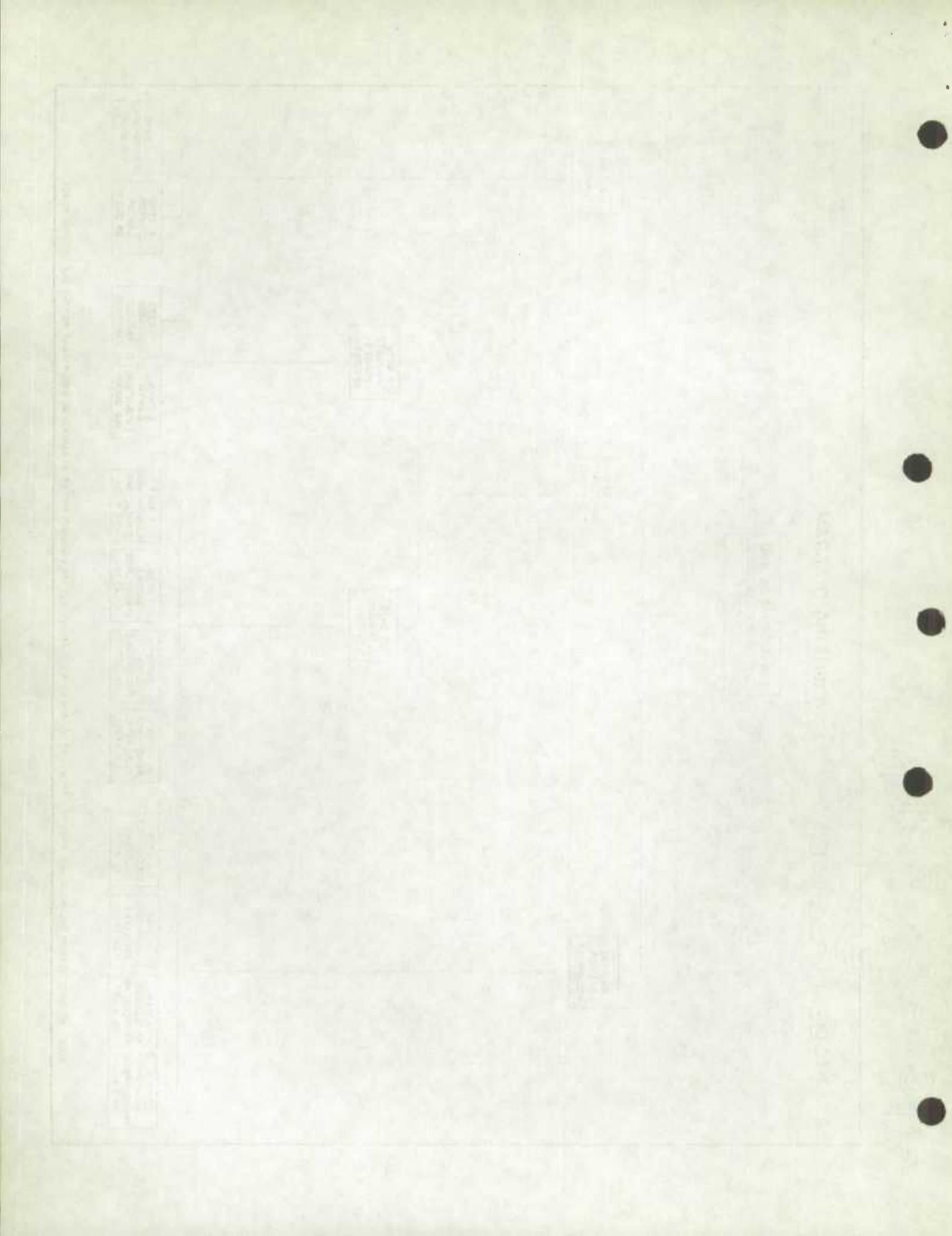


TABLE 1. Price Indexes of Electric Utility Distribution Systems, Major Components and Items, Canada, Annually, 1956-66
(1961 = 100)

Total, major components and items	Indexes													
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	Prelimi- nary 1966	1967	1968	1969
Distribution systems	95.1	96.5	93.2	96.8	100.3	100.0	101.9	102.5	104.6	107.3	113.9			
Construction	92.7	91.9	93.5	96.3	98.5	100.0	102.5	105.2	107.8	112.7	120.6			
Materials(1)	103.8	100.4	98.7	100.6	100.3	100.0	101.8	103.9	105.2	110.0	116.9			
Poles	99.1	97.5	99.1	104.8	99.3	100.0	104.0	108.4	107.3	121.1	130.9			
Eastern cedar	120.8	101.9	101.3	116.2	100.2	100.0	109.0	112.1	109.1	109.8	123.6			
Western cedar	97.7	97.2	99.0	104.1	99.2	100.0	103.6	108.1	107.2	121.8	131.4			
Crossarms	113.1	97.4	94.9	110.2	105.7	100.0	111.9	116.6	128.0	128.2	129.9			
Hardware	96.5	97.4	99.5	99.7	100.0	100.0	101.3	103.5	103.5	102.0	101.8			
Secondary Facks	95.9	96.7	98.8	99.6	99.9	100.0	102.6	104.4	104.4	98.6	90.1			
Other hardware	96.8	97.7	99.8	99.7	100.0	100.0	100.9	103.2	103.2	103.3	106.3			
Conductors	107.9	103.4	99.1	98.1	100.2	100.0	99.7	100.6	102.3	106.6	116.1			
Triplex	102.9	105.5	102.3	97.8	100.0	100.0	98.1	97.4	97.2	99.4	103.4			
Polyethylene insulated-Aluminum	102.9	105.5	102.3	97.8	100.0	100.0	98.1	97.4	97.3	99.6	103.5			
Copper	123.0	96.9	89.3	99.0	100.7	100.0	104.6	110.3	117.5	128.0	153.9			
Insulators	94.9	95.2	95.9	98.7	102.0	100.0	100.6	101.4	101.4	106.0	112.2			
Luminaires	96.1	97.1	97.0	99.2	100.1	100.0	101.2	102.7	103.0	98.5	95.1			
Labour	75.7	78.5	84.9	89.3	95.3	100.0	104.3	108.3	112.8	118.6	128.9			
Groundmen	75.0	78.1	84.6	88.8	95.0	100.0	104.3	108.5	113.0	118.5	129.6			
Linemen	76.1	78.8	85.1	89.6	95.5	100.0	104.2	108.2	112.8	118.8	128.5			
Construction equipment	85.2	90.1	93.8	96.2	98.9	100.0	99.4	100.0	101.3	102.4	105.5			
Equipment-trucks	82.6	90.5	95.7	97.8	99.6	100.0	102.3	103.5	103.7	103.6	104.8			
Operating expenses(2)	87.7	89.7	91.9	94.5	98.2	100.0	96.4	96.6	99.0	101.2	106.2			
Distribution systems equipment(1)	100.4	106.6	92.5	97.9	104.3	100.0	100.4	96.4	97.6	95.4	99.1			
Meters	89.4	96.7	98.3	99.1	100.0	100.0	100.0	99.1	98.6	98.6	98.6			
Transformers	107.3	112.9	88.9	97.1	107.1	100.0	100.6	94.7	96.9	93.3	99.3			

(1) Combined materials and distribution systems equipment index

systems equipment index

(2) Detailed commodity detail for operating expenses is shown in Table 2.

TABLE 2. Price Indexes of Electric Utility Transmission Lines, Major Components and Items, Canada, Annually, 1956-66
(1961 = 100)

Total, major components and items	Indexes													
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	Prelimi- nary 1966	1967	1968	1969
Transmission lines	92.1	94.5	95.7	97.0	98.9	100.0	100.9	102.3	102.7	108.3	113.6			
Materials	98.5	100.3	99.8	100.0	100.3	100.0	99.9	100.5	99.6	105.7	109.5			
Poles, towers and fixtures	95.8	97.3	98.8	102.0	100.3	100.0	101.3	103.1	103.5	108.7	114.2			
Poles, western cedar	97.7	97.2	99.0	104.1	99.2	100.0	100.4	103.8	101.8	115.2	130.7			
Crossarms	113.1	97.4	94.9	110.2	105.7	100.0	111.9	116.6	128.0	128.2	129.9			
Hardware	96.8	97.7	99.8	100.0	100.0	100.0	100.9	103.2	103.2	103.3	106.3			
Towers	90.8	97.1	99.0	99.8	100.0	100.0	100.0	100.0	100.0	100.0	102.4			
Conductors and insulators	101.2	103.5	100.9	97.9	100.3	100.0	98.5	97.9	95.5	102.6	104.8			
Conductors ACSR	102.4	105.0	101.9	97.7	100.0	100.0	98.1	97.3	94.4	101.9	103.4			
Insulators	94.9	95.2	95.9	98.7	102.0	100.0	100.6	101.4	101.4	106.0	112.2			
Labour	75.2	78.5	84.5	88.7	94.9	100.0	104.6	108.6	112.8	118.4	128.6			
Groundmen	74.7	78.0	84.2	88.3	94.6	100.0	104.7	108.8	113.0	118.4	129.3			
Linemen	76.0	79.3	85.0	89.3	95.4	100.0	104.5	108.2	112.5	118.4	127.6			
Construction equipment	84.2	88.2	91.5	94.3	97.5	100.0	99.2	99.4	101.4	103.0	106.4			
Equipment	78.2	84.3	89.9	93.2	96.1	100.0	104.1	104.9	107.2	109.0	111.6			
Bulldozers	76.9	82.6	87.9	92.0	95.3	100.0	104.2	106.2	111.0	112.3	112.5			
Compressors	75.1	79.9	86.0	89.8	93.5	100.0	105.6	105.0	106.8	111.2	117.6			
Trucks	82.6	90.5	95.7	97.8	99.6	100.0	102.3	103.5	103.7	103.6	104.8			
Operating expense	90.2	92.2	93.1	95.4	98.8	100.0	94.3	93.8	95.7	97.3	101.1			
Diesel fuel	99.1	103.2	97.9	99.6	100.0	100.0	101.7	103.1	101.3	98.1	97.7			
Gasoline	96.5	99.6	99.8	99.9	99.5	100.0	98.3	90.7	91.5	88.4	88.8			
Lubricating oil	91.0	94.1	94.5	96.0	98.4	100.0	99.8	99.2	99.5	102.9				
Tires	94.4	94.1	92.8	96.2	101.7	100.0	79.1	79.6	81.9	84.6	88.7			
Tubes	93.1	92.5	89.7	88.9	88.9	100.0	100.8	100.8	100.8	102.5	99.7			
Repair parts	93.4	95.3	96.6	97.3	98.7	100.0	101.0	103.7	103.5	103.9	104.8			
Mechanics	75.2	78.5	84.5	88.7	94.9	100.0	104.6	108.6	112.8	118.4	128.6			

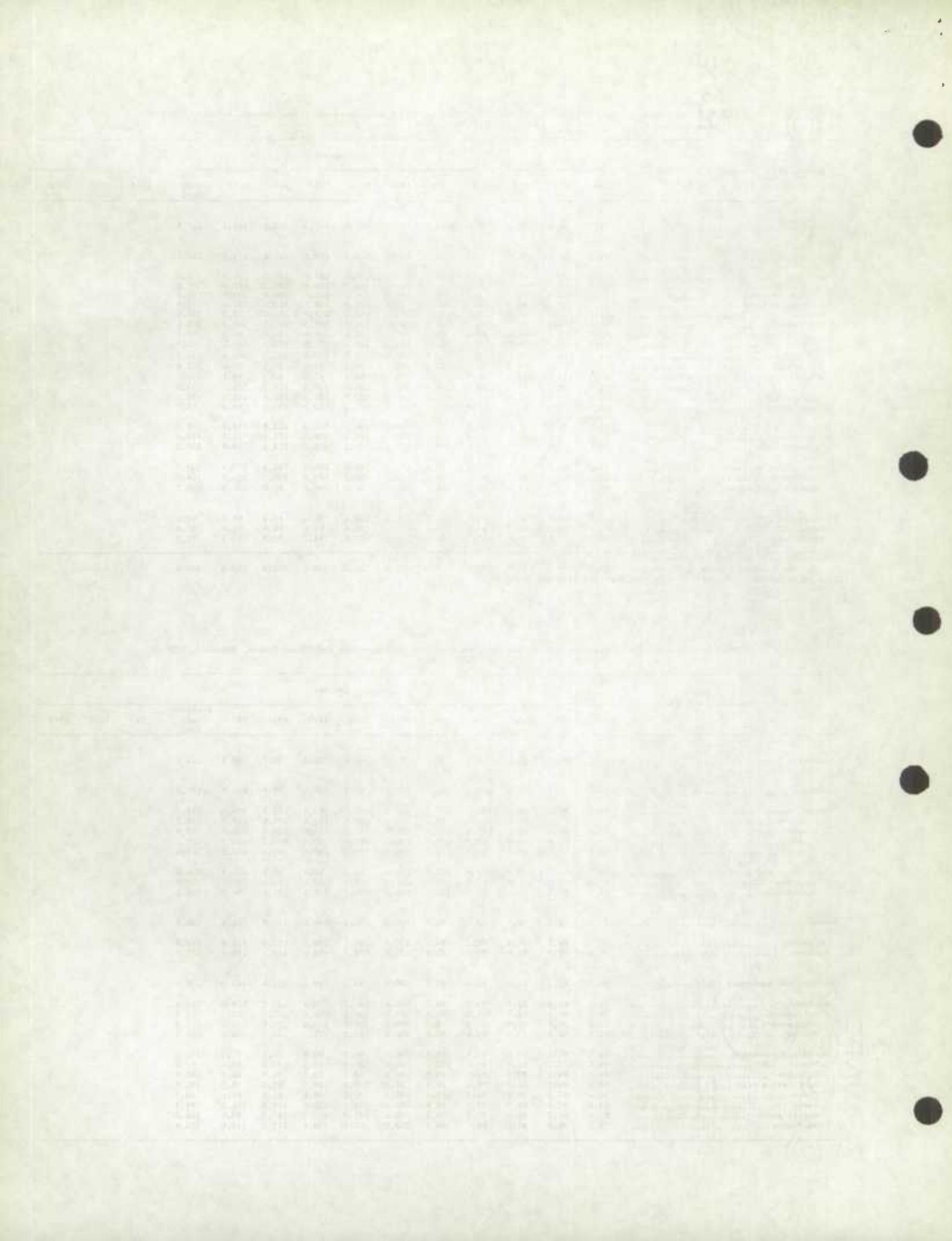


TABLE 3. Price Indexes of Electric Utility Transformation and Switching Stations, Major Components and Items, Canada, Annually, 1956-66
(1961 = 100)

Total, major components and items	Indexes											Prelimi- nary 1966	1967	1968	1969
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965					
Transformation and switching stations	117.2	118.4	107.6	112.4	109.2	100.0	107.0	113.6	120.1	126.5	133.7				
Structures and improvements	109.3	105.4	101.2	101.8	102.9	100.0	103.2	109.6	113.3	123.7	132.1				
Materials	100.0	99.8	99.0	99.6	100.5	100.0	101.3	104.6	110.0	118.2	122.5				
Ready-mix concrete	99.8	100.0	100.0	100.0	100.0	100.0	107.2	112.4	114.1	117.3	115.5				
Steel structures	92.3	97.4	99.0	99.8	100.6	100.0	100.1	102.4	107.1	114.6	116.0				
Wooden structures	102.2	97.1	97.1	103.9	102.5	100.0	104.2	108.9	116.0	125.0	130.7				
Buswork and conductors	109.6	103.5	99.0	98.3	100.2	100.0	100.0	103.5	110.8	121.8	131.6				
In-place prices	145.9	127.3	109.8	110.5	112.3	100.0	110.9	129.2	126.2	145.1	169.8				
Earth excavation	157.2	131.2	111.8	115.5	119.2	100.0	117.3	141.1	135.7	156.4	187.5				
Crushed gravels	127.4	121.0	106.4	102.3	101.1	100.0	100.4	109.7	110.7	126.7	141.0				
Labour	74.3	77.6	82.4	88.6	94.7	100.0	104.3	107.6	111.5	118.6	128.2				
Common	71.2	75.4	81.3	87.3	93.9	100.0	105.6	109.3	114.2	120.8	132.7				
Electricians	76.0	78.8	83.1	89.3	95.1	100.0	103.6	106.8	110.0	117.4	125.7				
Station equipment	131.1	133.0	116.2	121.6	114.8	100.0	108.7	116.2	124.2	129.4	135.7				
Power transformers	148.9	155.2	126.1	133.1	119.7	100.0	115.7	125.2	135.6	138.7	144.0				
Metalclad switchgear	132.1	125.1	115.9	119.9	116.0	100.0	103.0	109.0	113.9	125.2	133.6				
Circuit breakers	95.2	97.3	96.7	101.1	104.4	100.0	100.9	106.4	112.8	115.8	121.6				
Disconnect switches	96.5	100.7	98.8	97.2	99.9	100.0	100.1	102.4	107.1	114.6	121.2				

TABLE 4. Indexes for Labour Components of Electric Utility Construction Price Indexes
Canada and Nine Cities, Annually, 1956-66
(1961 = 100)

	Weights		Indexes											Prelimi- nary 1966	1967	1968	1969
	For dis- tribution systems	For trans- mission lines	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965					
<u>Linemen</u>																	
St. John's	2.0	.4	74.2	76.6	87.9	90.6	96.9	100.0	104.3	105.5	107.4	109.0	114.1				
Halifax	2.3	2.9	74.2	76.6	87.9	90.6	96.9	100.0	104.3	105.5	107.4	109.0	114.1				
Saint John	1.8	6.0	74.2	76.6	87.9	90.6	96.9	100.0	104.3	105.5	107.4	109.0	114.1				
Montreal	28.0	28.0	73.9	75.0	81.8	86.9	93.7	100.0	109.7	113.6	118.7	127.8	140.3				
Toronto	27.5	27.8	78.2	81.2	83.9	85.6	94.6	100.0	103.4	106.7	110.4	114.1	123.2				
Winnipeg	12.9	2.9	77.6	80.8	88.5	94.2	97.4	100.0	100.0	105.1	110.9	116.0	126.3				
Regina	9.0	9.6	77.6	80.8	88.5	94.2	97.4	100.0	100.0	105.1	110.9	116.0	126.3				
Edmonton	5.0	9.7	77.4	82.2	86.3	91.1	94.5	100.0	102.4	104.1	108.2	112.3	115.8				
Vancouver	11.5	12.7	74.2	78.2	87.7	95.4	98.2	100.0	101.8	107.4	112.3	121.2	129.4				
<u>Linemen:</u>																	
For distribution system	100.0		76.1	78.8	85.1	89.6	95.5	100.0	104.2	108.2	112.8	118.8	128.5				
For transmission lines		100.0	76.0	79.3	85.0	89.3	95.4	100.0	104.5	108.2	112.5	118.4	127.6				
<u>Groundmen</u>																	
St. John's	2.0	.4	81.0	86.4	90.5	92.5	96.6	100.0	106.1	110.9	115.6	117.7	125.9				
Halifax	2.3	2.9	81.0	86.4	90.5	92.5	96.6	100.0	106.1	110.9	115.6	117.7	125.9				
Saint John	1.8	6.0	81.0	86.4	90.5	92.5	96.6	100.0	106.1	110.9	115.6	117.7	125.9				
Montreal	28.0	28.0	73.9	75.0	81.8	86.9	93.7	100.0	109.7	113.6	118.7	127.8	140.3				
Toronto	27.5	27.8	74.0	78.2	84.4	86.0	94.8	100.0	102.9	106.2	109.4	113.0	124.0				
Winnipeg	12.9	2.9	77.6	80.8	88.5	94.2	97.4	100.0	100.0	105.1	110.9	116.0	126.3				
Regina	9.0	9.6	77.6	80.8	88.5	94.2	97.4	100.0	100.0	105.1	110.9	116.0	126.3				
Edmonton	4.2	9.7	71.8	73.9	79.8	85.6	91.0	100.0	103.2	107.4	109.0	112.8	119.1				
Vancouver	10.8	73.1	78.1	83.6	89.5	95.0	100.0	102.3	107.3	111.9	116.4	129.7					
Common labourer	100.0	71.2	75.4	81.3	87.3	93.9	100.0	105.6	109.3	114.2	120.8	132.7					
<u>Electrician</u>																	
Halifax	2.7	81.0	86.4	90.5	92.5	96.6	100.0	106.1	110.9	115.6	117.7	125.9					
Saint John	2.1	82.9	91.0	94.6	94.6	96.4	100.0	103.6	103.6	106.3	117.1	120.9					
Montreal	31.7	73.9	75.0	81.8	86.9	93.7	100.0	109.7	113.6	118.7	127.8	140.3					
Toronto	37.6	66.8	72.8	78.2	85.1	93.1	100.0	105.0	108.6	114.6	120.0	132.3					
Winnipeg	6.1	67.3	74.5	80.0	89.7	95.2	100.0	100.0	100.0	100.0	109.1	123.0					
Regina	4.8	77.6	90.8	88.5	94.2	97.4	100.0	100.0	105.1	110.9	116.0	126.3					
Edmonton	4.2	71.8	73.9	79.8	85.6	91.0	100.0	103.2	107.4	109.0	112.8	119.1					
Vancouver	10.8	73.1	78.1	83.6	89.5	95.0	100.0	102.3	107.3	111.9	116.4	129.7					
Common labourer	100.0	71.2	75.4	81.3	87.3	93.9	100.0	105.6	109.3	114.2	120.8	132.7					
<u>Electrician</u>																	
Halifax	2.7	78.3	81.7	85.2	88.3	92.6	100.0	102.2	104.3	108.7	110.0	117.4					
Saint John	2.1	79.0	82.0	86.0	89.5	96.0	100.0	106.0	106.5	110.0	115.0	127.5					
Montreal	31.7	80.0	83.2	90.0	95.2	100.0	106.0	108.8	112.0	124.0	135.6						
Toronto	37.6	71.6	75.6	79.5	85.7	93.5	100.0	102.5	105.3	108.1	113.2	118.0					
Winnipeg	6.1	73.6	80.4	85.0	91.1	96.8	100.0	101.4	103.5	106.1	108.9	121.1					
Regina	4.8	88.0	89.3	92.7	96.6	98.7	100.0	106.8	111.1	114.5	118.8	130.8					
Edmonton	4.2	77.4	82.2	86.3	91.1	94.5	100.0	102.4	104.1	108.2	112.3	115.8					
Vancouver	10.8	74.2	78.2	87.7	95.4	98.2	100.0	101.8	107.4	112.3	121.2	129.4					
Electrician	100.0	76.0	78.8	83.1	89.3	95.1	100.0	103.6	106.8	110.0	117.4	125.7					

(*) All wage rate indexes are derived from data supplied by the Labour Standards Branch of the Department of Labour.

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